AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A device for treating a volume of biological tissue by localized hyperthermia, the device including a plurality of active percutaneous electrodes (1-N), at least one return electrode (120), and a high frequency electricity generator (100) suitable for applying an alternating voltage between the active electrodes (1-N) and the return electrode (120),wherein the generator (100) is suitable for feeding each active electrode (1-N) independently of the others including means (20) for adjusting the amplitude ~~and the phase~~ of the voltage applied to each active electrode (1-N) and phase differences between the voltages applied by the electrodes, such that the parameters of the voltage and the phase applied to each active electrode is adjusted in an independent manner, thus generating electric currents propagating between the active electrodes (1-N) within the volume of biological tissue and causing necroses of the biological tissue.

2. (Cancelled)

3. (Previously Presented) The device according to claim 2, wherein the generator is suitable for applying voltages to two active electrodes i and j that present respective amplitudes V_i and V_j with a phase difference Φ_{ij} between the voltages that is equal to:

$$\Phi_{ij} = a\cos\left(\frac{V_i^2 + V_j^2 - \Delta^2}{2V_i \bullet V_j}\right), \Delta \in \left\lfloor |V_j - V_i| V_i + V_j \right\rfloor$$

where Δ is a desired potential difference between the electrodes i and j, and V_i is the amplitude of the potential difference between the i^{the} electrode and the return electrode.

4. (Previously Presented) The device according to claim 1, wherein the electricity generator (100) is a multichannel voltage generator.

5. (Previously Presented) The device according to claim 1, wherein the generator (100) includes a set of manually or automatically controlled switches (60), the switches being suitable for independently activating or deactivating feed to one or more electrodes.

6. (Previously Presented) The device according to claim 1, including a plurality of active electrodes (1-N) disposed at equal distances from a percutaneous return electrode (120).

7. (Previously Presented) The device of claim 1, having an even number of active electrodes (N=2p, for integer p).

8. (Currently Amended) The device according to claims 6 ~~and~~ or 7, having six active electrodes (1-6) distributed in uniform manner in a cylindrical configuration, the return electrode being disposed at the center of the cylinder.

9. (Previously Presented) The device according to claim 6, wherein the generator (100) is suitable for providing feed voltages presenting phase differences that alternate between consecutive pairs of electrodes.

10. (Previously Presented) The device according to claim 6, wherein the generator (100) is suitable for supplying feed voltages presenting equal phase differences between successive pairs of electrodes.

11. (Previously Presented) The device according to claim 1, including an additional, external return electrode (11), in particular in the form of a cutaneous conductive plate.

12. (Previously Presented) The device according to claim 1, including means for measuring impedance between electrodes and/or means for taking local temperature measurements, and means for controlling the applied voltages as a function of the impedance and/or temperature measurements taken.

13. (Currently Amended) A method of treating a volume of biological tissue by localized hyperthermia, the method comprising steps of:

positioning a plurality of active percutaneous electrodes (1-N) and at least one return electrode (120) in the tissue to be treated; and

applying an alternating voltage between the active electrodes (1-N) and the return electrode (120) by means of a high frequency electricity generator (100);

wherein for each active electrode (1-N) being fed independently of the others, the method also comprises the step of adjusting the parameters of the voltage applied to each active electrode (1-N) by determining and setting the amplitudes V_i and the phases Φ_i of the voltages applied to the electrodes, thus generating electric currents propagating between the active electrodes (1-N) within the volume of biological tissue and causing necroses of the biological tissue.

14. (Previously Presented) The method according to claim 13, wherein the active electrodes (1-N) are disposed in a cylindrical configuration around the percutaneous return electrode (120).

15. (Previously Presented) The method according to claim 14, wherein six active electrodes (1-6) are distributed uniformly around a cylindrical configuration, the return electrode (120) being disposed in the center of the cylinder.

16. (Previously Presented) The method according to claim 13, wherein the step of adjusting the parameters of the voltage applied to each active electrode (1-N) includes independently activating and deactivating the feed to one or more electrodes.

17. (Cancelled)

18. (Previously Presented) The method according to claim 13, wherein the phases Φ_i of the voltages applied to the electrodes (1-N) are determined in application of the steps of:

defining, for two electrodes i and j, amplitude values V_i and V_j for the voltages that are applied respectively thereto, and also defining a potential difference A that is desired between the electrodes i and j; and

deducing therefrom a phase difference Φ_{ij} between the voltages applied to the electrodes i and j in application of the following relationship:

$$\Phi_{ij} = a\cos\left(\frac{V_i^{\,2} + V_j^{\,2} - \Delta^2}{2V_i \bullet V_j}\right), \Delta \in \left\lfloor \left|V_j - V_i\right| V_i + V_j \right\rfloor$$

19. (Previously Presented) The method according to claim 13, wherein the active electrodes (1-N) are disposed in a cylindrical configuration around the return electrode, and the generator (100) is controlled to deliver feed voltages presenting alternating phase differences between consecutive pairs of electrodes.

20. (Previously Presented) The method according to claim 13, wherein the active electrodes (1-N) are disposed in a cylindrical configuration around the return electrode, and the generator (100) is controlled to supply feed voltages presenting equal phase differences between successive pairs of electrodes.